DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

Endangered and Threatened Wildlife and Plants; Notice of Finding on a Petition to Delist the Gray Wolf (Canis lupus)

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Notice of finding on petition.

SUMMARY: The Service announces a 90-day finding for a petition to amend the Lists of Endangered and Threatened Wildlife and Plants. A finding has been made for the gray wolf (*Canis lupus*) that substantial information has not been presented to indicate that delisting the species is warranted.

DATES: The finding announced in this notice was made in October 1990. Comments and information may be submitted until further notice.

ADDRESSES: Information, comments, or questions regarding this petition may be submitted to the Chief, Division of Endangered Species, U.S. Fish and Wildlife Service, Federal Building, Ft. Snelling, Twin Cities, Minnesota 55111. The petition, finding, supporting data, and comments are available for public inspection, by appointment, during normal business hours at the above address.

FOR FURTHER INFORMATION CONTACT: William F. Harrison (612/725–3276 or FTS 725–3276) at the above address.

SUPPLEMENTARY INFORMATION:

Background

Section 4(b)(3)(A) of the Endangered Species Act of 1973, as amended in 1982 (16 U.S.C. 1531 *et seq.*), requires that the Service make a finding on whether a petition to list, delist, or reclassify a species presents substantial scientific or commercial information to demonstrate that the petitioned action may be warranted. To the maximum extent practicable, this finding is to be made within 90 days of the receipt of the petition, and the finding is to be published promptly in the **Federal Register**. If the finding for a petition to list a species is positive, the Service is also required to promptly commence a review of the status of the involved species.

The Service has received and made a finding on a petition to delist the gray wolf (*Canis lupus*). The petition, dated July 11, 1990, was submitted by the Farm Bureau Federations of Wyoming, Montana, and Idaho, and was received by the Service on July 16, 1990.

The petition presents the contention that gray wolves are hybridizing with other canids, especially coyotes. The petition states that this hybridization is current, frequent, and widespread. The petition includes a list of literature references to support the discussion of wolf hybridization.

The Service's interpretation of the discussion within the petition is that the following two issues are put forth as the consequences of hybridization:

1. The gray wolf is not a species, and thus is not eligible for listing and protection under the Endangered Species Act;

2. The Service is unable to distinguish "pure" wolves from hybrid wolves so it is impossible to effectively carry out a program designed for the eventual recovery of the gray wolf.

The Service has reviewed the petition, the literature cited in the petition, other available literature and data, and consulted with wolf experts and molecular genetic analysis researchers. After evaluating all the information at our disposal, the Service finds that the petition does not present substantial information indicating that the requested action may be warranted. The following points summarize the reasons for this finding:

1. Neither the submitted data, nor other available data, provide substantial support for the occurrence of widespread hybridization between United States gray wolves and other wild canids.

The petition provides twenty literature references, with the petition text including information from additional publications that are not referenced. The Service has reviewed the references, along with other data, to determine their content, significance, and relevance to the petitioned action. With one exception (Anonymous 1990, discussed below) the Service views the data presented in the petition as subjective, circumstantial, and anecdotal. Some of the references contain old data (Anonymous 1927; Audubon and Bachman 1851; Gier 1975; Murie 1940; Weaver 1978) that are not relevant to the current situation. Several are from studies conducted outside of the United States (Stansfield 1970) or beyond the current U.S. range of the gray wolf (Henshaw 1982) and are of limited value in evaluating the status of gray wolves listed as threatened and endangered in the United States. Several present data dealing with hybridization in other canids (Freeman 1976; Mech 1970) or between canids in captivity (Nowak 1979; Theberge 1981). Such data represent only speculation and provide no hard data useful in evaluating hybridization in wild populations of gray wolves. The remaining references (Anonymous 1986; Anonymous 1988; Chiarelli 1975; Fuller 1989; Mayr 1970; Robinson 1989; Seal 1975; U.S. Fish and Wildlife Service 1987) deal only with background information (e.g. wolf pack behavior, molecular genetic analytical methodology, hybridization theory) and do not address wolf-coyote hybridization.

In contrast to these references, several studies and unpublished data from the many gray wolves captured in research and depredation control programs contain no evidence of wolf-coyote hybridization in Rocky Mountain wolves or in the U.S. Great Lakes wolf population in recent decades. These researchers, without exception, have reported populations of U.S. gray wolves that do not exhibit hybrid characteristics and are phenotypically

pure wolves (Fritts, U.S. Fish and Wildlife Service, pers. comm.; Fritts and Mech 1981; Fuller 1989; Mech, U.S. Fish and Wildlife Service, pers. comm.; Mech and Frenzel 1971; Nowak, U.S. Fish and Wildlife Service, pers. comm.; Van Ballenberghe 1977; Van Ballenberghe et al. 1975).

2. The petition misinterprets recent mitochondrial DNA (mtDNA) data by considering mtDNA to be equivalent to nuclear DNA.

The petition contains a single reference (Anonymous 1990) that bears directly hybridization in the existing U.S. wolf population and contains recent and quantitative data. That reference is to a three-sentence article that appeared in the February 1990 Endangered Species Technical Bulletin (incorrectly cited in the petition as the April 1990 issue). That article reported that coyote mtDNA was found in more than 50 percent of 72 gray wolves sampled from Minnesota. The petition quotes the all three sentences and adds several pages of discussion of the presumed biological implications of this finding. The petition clearly, but erroneously, equates mtDNA with nuclear DNA (the DNA found in the nucleus of cells) and bases its conclusions upon that error. Mitochondrial DNA differs substantially from nuclear DNA in both its function and in its method of inheritance.

Mitochondrial DNA does not occur in the cell nucleus and does not function in the production of observable traits. It codes only for proteins made and used within the mitochondria of individual cells. It does not code for the inherited physical and behavioral characteristics of the organism upon which natural selection can act. It is solely nuclear DNA that carries the genetic codes for the physical and behavioral traits of the offspring.

Mitochondrial and nuclear DNA are inherited differently because mtDNA is not located in the cell nucleus. Male sperm are essentially mobile nuclei carrying half of the male's genetic code in the nuclear DNA; sperm carry no mtDNA. Female eggs are complete female cells, including mtDNA outside the nucleus, and with nuclei containing half of the female's genetic code in the nuclear DNA. At fertilization the hybridization of mtDNA cannot occur because the sperm lacks mtDNA to join with the mtDNA of the egg.

These differences between mtDNA and nuclear DNA have several very significant implications. First, a developing embryo contains only its mother's mtDNA; none is inherited from its father. In contrast, nuclear DNA is passed on by both parents, and the nuclear DNA carried by an embryo originates equally from both parents. Second, once new mtDNA is introduced into a population, it (or possibly a mutated version of it) will persist indefinitely as long as that matriline (i.e., an unbroken series of female descendants) exists. The action of natural selection will modify the frequency of organisms having particular physical and behavioral traits; this also will change the frequency of the causative nuclear DNA in a population by changing the frequency of carriers of that nuclear DNA. However, mtDNA is not phenotypically expressed and is largely unaffected by natural selection. It can persist in a population despite the total elimination of nuclear DNA that originally came from the same source.

Nuclear and mitochondrial DNA differences mean that mtDNA data cannot be treated like nuclear DNA data when one is studying hybridization. For example, over a number of generations the frequencies of particular types of mtDNA in a population have no reliable correlation with the number of hybridization events, their frequency, or their timing. Further, the existence of a type of mtDNA in a population cannot be used to predict the presence or frequency of nuclear DNA that may have come from the same source.

The cited mtDNA data resulted from a recent study (Lehman, et al, in press) of the occurrence of coyote mtDNA in gray wolves throughout much of North America. The study used recently developed techniques and is the first to look at mtDNA in wild gray wolves, so the results of the study may be subject to future reinterpretation. Thus, the findings should not be viewed as conclusive until the data are expanded and replicated in additional studies. However, a reasonable interpretation of the mtDNA data, as it related to this petition, is as follows:

(a) In certain areas of North America, male wolves have mated with female coyotes in the past, leading to exchange of nuclear and mtDNA. Within the U.S., the data indicate that two wolf-coyote hybridizations have occurred in Great Lakes area wolves, and no hybridizations in Rocky Mountain wolves. The Lehman, et al, study shows that a larger number of hybridization events (at least an additional four) have occurred in southern Ontario wolf populations, and there is no mtDNA evidence that wolf-coyote hybridization has occurred in Canadian wolves west of Lake of the Woods, Ontario.

(b) Due to the maternal inheritance of mtDNA, coyote-type mtDNA passed on in wolves from these hybridization events is not "bred out," or diluted, over time in the recipient wolf population. It is passed on from a mother to her offspring in its entirety (subject to normal mutation), and its frequency depends solely upon the survival and spread of the matriline in the population. In contrast, any nuclear DNA received from coyotes can be "bred out" by natural selective pressures over succeeding generations, and this appears to have happened in the recipient U.S. wolf populations. There are no data showing phenotypic (morphological) expression of coyote traits in U.S. gray wolf populations. The study suggests that the female offspring from past hybridizations backcrossed with pure male wolves, and their offspring did the same. These backcrossings would produce rapidly decreasing proportions of coyote nuclear DNA in individual wolves, while maintaining the entire mtDNA complement. Thus, coyote traits from the coyote nuclear DNA would rapidly disappear from the wolf population, even though the mtDNA persisted.

(c) The coyote-type mtDNA found in Minnesota and Michigan wolves has diverged, via mutations, from the presumed coyote-type from which it originated. The extent of divergence, coupled with the chronology of coyote range expansion, indicates the two U.S. hybridization events occurred at least 100 years ago (Lehman, et al, in press) significantly earlier than the southeastern Ontario hybridizations, where the coyote-type mtDNA in wolves remains identical to mtDNA found in sympatric coyotes. This agrees with the existing phenotypic data which show possible coyote traits (i.e., smaller size in the "Tweed type") in southeastern Ontario and Quebec wolves, but no evidence of coyote traits in U.S. wolves.

In summary, the mtDNA study (Lehman, et al. in press) referenced in the petition supports the hypothesis of very infrequent past hybridizations between U.S. wolves and coyotes in the Great Lakes area. The mtDNA data also show a complete absence of hybridization between wolves and coyotes west of the 95th meridian (roughly where the Manitoba-Ontario border meets the U.S. border) even where coyotes are abundant in wolf range. The data do not provide any evidence of the current presence of coyote nuclear DNA in U.S. wolves, and the study provides a likely scenario for the rapid elimination of coyote nuclear DNA following a hybridization occurrence. The study does not provide any evidence of coyote phenotypic traits persisting in U.S. wolves.

3. The Service is not permitted to consider the probability of successfully recovering a species when making a decision to list or delist a species.

The petition presents the argument that if the Service is unable to distinguish "pure" wolves from hybrid wolves an effective recovery program cannot be carried out for the species. In contrast, section 4(a)(1) of the Endangered Species Act specifies the criteria to be used in designating a species as threatened or endangered. The probability of achieving successful recovery of a species is not a factor the Service can consider when making a listing or delisting decision. Thus, the potential difficulty the Service might encounter in trying to distinguish "pure" wolves from possible hybrids is not a relevant factor in any decision to list or delist the gray wolf.

4. The best scientific and commercial data available support continued listing for the gray wolf.

The Service is required to use the best scientific and commercial data available when making a listing/delisting decision. As discussed above, the scientific data supporting hybridization in U.S. wolves currently came from a single study. That study suggests past, infrequent hybridizations, but provides no support for current and/or widespread hybridization in U.S. Great Lakes wolf populations. If provides strong support for the absence of wolf-coyote hybridization in Rocky Mountain wolves in the U.S. and Canada. The remainder of the relevant scientific data show that current U.S. wolves lack coyote phenotypic traits.

Reasonable caution, an understanding of the classic scientific method, and the Endangered Species Act itself all argue for a cautious approach in applying new data and methodologies to the delisting of endangered and threatened species. The Lehman, et al., study raises important questions that should stimulate further investigation but should not be considered strongly supportive of a significant change in listing and protection for an endangered and threatened species.

It is incumbent upon the Service to avoid a possibly premature and unwarranted removal or relaxation of protection for a listed species. Given the current "state of the art" of DNA analysis and interpretation in wild canids, the Service must adopt a conservative approach in the absence of other substantial data supporting delisting of a gray wolf.

On the basis of the best scientific and commercial information available, the Service finds that this petition does not present substantial information indicating that the action requested may be warranted. The Service recognizes the possibility of wolf hybridization with other canids in certain geographic localities and will continue to encourage scientific research in this area. In addition, the Service recognizes that recent advances in molecular genetics have made it difficult to interpret such data in light of the classic biological species concept. However, several different species concepts, including a revised biological species concept, are now dominating taxonomic thinking. These alternative concepts incorporate the idea of limited genetic interchange with other recognized species if there are clear selective pressures working against the persistence of intermediate types. The Service is currently reviewing and evaluating possible alternate species concepts, with possible ramifications for the Service's approach to protection of endangered and threatened species when infrequent interbreeding occurs with other taxa.

References cited

Anonymous. 1927. Predatory and Fur-Bearing Animals of Yellowstone Park. Roosevelt Wild Life Bulletin 4(2). Roosevelt Wild Life Forest Experiment Station, New York State College of Forestry, Syracuse University.

Anonymous. 1986. Looking at the Wolf: Behavior—Biology—Biases. Biologue 1(1). Teton Science School. Kelly, Wyoming.

Anonymous. 1988. Wolves of the Northern Rockies. National Wildlife Federation. Washington, DC.

Anonymous. 1990. Region 8. Regional News. Endangered Species Technical Bulletin 15(2). U.S. Fish and Wildlife Service.

Audubon, John J. and Bachman, John. 1851. The Quadrapeds of North America.

Chiarelli, A.B. 1975. Chromosomes of the *Canidae* in The Wild Canids, edited by M.W. Fox. Behavioral Science Series. Van Nostrand Reinhold Company, New York.

Freeman, Ronald Carl. 1976. Coyote X Dog Hybridization and Red Wolf Influence in The Wild *Canis* of Oklahoma. M.S. Thesis, Oklahoma State University. 51 pp.

Fritts, S.H. and L. David Mech. 1981. Dynamics, movements, and feeding ecology of a newly protected wolf population in northwestern Minnesota. Wildlife Monographs No. 80. Wildlife Monographs. No. 80. Wildlife Society.

Fuller, Todd K. 1989. Population Dynamics of Wolves in North-Central Minnesota. Wildlife Monographs. 105. Wildlife Society.

Gier, H.T. 1975. Ecology and Behavior of the Coyote (*Canis latrans*) in The Wild Canids, edited by M.W. Fox. Behavioral Science Series. Van Nostrand Reinhold Company, New York.

Henshaw, Robert E. 1982. Can the Wolf be Returned to New York? Wolves of the World. Noyes Publications, Park Ridge, New Jersey.

Lehman, Niles, Andrew Eisenhower, Kimberly Hansen, L. David Mech, Rolf O. Peterson, Peter J.P. Gogan, and Robert K. Wayne. In press. Introgression of Coyote Mitochondrial DNA into Sympatric North American Gray Wolf Populations. Evolution.

Mayr, Ernst. 1970. Populations, Species, and Evolution. An Abridgement of Animal Species and Evolution. The Belnap Press of Harvard University Press. Cambridge, Massachusetts.

Mech, L. David. 1970. The Wolf. Natural History Press, New York.

Mech, L. David and L. Daniel Frenzel, Jr. 1971. Ecolgical studies of the timber wolf in northeastern Minnesota. USDA For. Serv. Res. Pap. NC-52. N. Cent. For. Expt. Sta., St. Paul, Minn. 62 pp.

Murie, Adolph. 1940. Ecology of the Coyote in the Yellowstone. North American Fauna Series No. 4. United States Printing Office. Washington, DC.

Nowak, Ronald M. 1979. North American Quaternary *Canis*. Monograph Number 6. Museum of Natural History, University of Kansas.

Robinson, Sandra Chisholm. 1989. The Wonder of Wolves. Denver Museum of Natural History, Boulder, Colorado.

Seal, U.S. 1975. Molecular Approaches to Taxonomic Problems in the *Canidae* in The Wild Canids, edited by M.W. Fox. Behavioral Science Series. Van Nostrand Reinhold Company, New York.

Standfield, R. 1970. Some considerations on the Taxonomy of Wolves in Ontario. Proceedings of a Symposium on Wolf Management in Selected Areas of North America. Thirty-fifth North American Wildlife and Natural Resources Conference, Chicago, Ill. March 24, 1970.

Therberge, John B. 1981. Considerations in Wolf Management Related to Genetic Variability and Adaptive Change. in Wolves in Canada and Alaska: their Status, Biology and Management, edited by Ludwig N. Carbyn. Proceedings of the Wolf Symposium, Edmonton, Alberta, 12–14 May, 1981. Canadian Wildlife Service report Series Number 45.

U.S. Fish and Wildlife Service. 1987. Northern Rocky Mountain Wolf Recovery Plan. U.S. Fish and Wildlife Service.

Van Ballenberghe, V. 1977. Physical characteristics of timber wolves in Minnesota. In R.L. Phillips and C. Jonkel (eds.), Proceeding of the 1975 Predator Symposium, Montana Forest Conservation Experimental Station, University of Montana, Missoula.

Van Ballenberghe, V., A.W. Erickson, and D. Byman. 1975. Ecology of the timber wolf in northeastern Minnesota. Wildlife Monographs 43:1–43.

Weaver, John. 1978. The Wolves of Yellowstone. Natural Resources Report Number 14. U.S. Department of the Interior, National Park Service.

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Species, U.S. Fish and Wildlife Service, Federal Building, Ft. Snelling, Twin Cities, Minnesota 55111 (612/725-3276 or FTS 725-3276.

Authority

The authority for this action is the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*).

List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, and Transportation.

Dated: November 23, 1990.

Bruce Blanchard,

Acting Director, Fish and Wildlife Service.

[FR Doc. 90-28164 Filed 11-29-90; 8:45 am]

BILLING CODE 4310-55-M

ACTION: Notice of availability of an amendment to a fishery management plan and request for comments.

SUMMARY: NOAA issues this notice that the Gulf of Mexico and South Atlantic Fishery Management Councils (Councils) have submitted Amendment 3 to the Fishery Management Plan for the Spiny Lobster Fishery of the Gulf of Mexico and South Atlantic (FMP) for review by the Secretary of Commerce (Secretary). Comments from the public are requested.

DATES: Written comments must be received on or before January 24, 1991.

ADDRESSES: Copies of Amendment 3 are available from the Gulf of Mexico Fishery Management Council, 5401 West Kennedy Boulevard, suite 881, Tampa, FL 33609-2486.

Comments should be sent to Michael E. Justen, Southeast Region, National Marine Fisheries Service, 9450 Koger Boulevard, St. Petersburg, FL 33702.

FOR FURTHER INFORMATION CONTACT: Michael E. Justen, 813-893-3722.

SUPPLEMENTARY INFORMATION: The Magnuson Fishery Conservation and Management Act (Magnuson Act) requires that a council-prepared fishery management plan or amendment be submitted to the Secretary for review and approval or disapproval. The Magnuson Act also requires that the Secretary, upon receiving the document, immediately publish a notice of its availability for public review and comment. The Secretary will consider public comment in determining approvability of the document.

On July 24, 1989, NOAA published at 54 FR 30826, revised guidelines interpreting the Magnuson Act's national standards for fishery management plans. In compliance with the revised guidelines, Amendment 3 proposes to add to the FMP a scientifically measurable definition of overfishing and an action plan to arrest overfishing should it occur. In addition, Amendment 3 proposes authority for NOAA to charge a fee to recover the administrative costs of issuing commercial and tail-separation permits and revision of the financial eligibility requirements for a corporate-owned vessel to obtain a Federal commercial spiny lobster permit.

Proposed regulations to implement Amendment 3 are scheduled to be published within 15 days.

Authority: 16 U.S.C. 1801, *et seq.*

Dated: November 26, 1990.

David S. Crestin,

Acting Director, Office of Fisheries Conservation and Management, National Marine Fisheries Service.

[FR Doc. 90-28085 Filed 11-26-90; 2:45 pm]

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